REMARKS

Reconsideration of this application, as amended, is respectfully requested.

Claims 1-30 are pending. Claims 1-30 stand rejected.

Claims 1, 8, 9, 16, 24, and 30 have been amended. Claims 17 – 24 have been canceled.

Support for the amendments is found in the specification, the drawings, and in the claims as

originally filed. Applicant submits that the amendments do not add new matter.

Claim Objections

Claims 8, 16 and 30 are objected to because two steps are labeled step (d) and two steps

are labeled step (e).

Applicant has amended claims 8, 16 and 30 to overcome this objection.

Drawing Objections

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every

feature of the invention specified in the claims. Therefore, the depth of the object type and the

depth of the query type must be shown or the feature(s) canceled from the claim(s). No new

matter should be entered.

Applicants respectfully submit that the claim limitations of the depth of the object type

and the depth of the query type are shown in Figure 4 and described in the specification in

reference thereto. Nevertheless, applicants have canceled these limitations from the claims.

Rejections Under 35 U.S.C. § 112

The Examiner has rejected claims 1-16 and 24-30 under 35 U.S.C. § 112, first paragraph,

as failing to comply with the enablement requirement. The claim(s) contain subject matter

which was not described in the specification in such a way as to enable one skilled in the art to

which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The Examiner has stated that

> Claim 1 recites "comparing a depth of the data object type within the plurality of successive type hierarchy references to a depth of the query type within the plurality of successive type hierarchy references to a depth of the query type within the plurality of successive type hierarchy references." The depth of the data object type and the depth of the query type in the hierarchy cannot be determined from the disclosure.
>
> Claims 9 and 24 recited language similar to the above and are thus rejected for the same reasons as above.
>
> Claims 2-8, 10-16 and 25-30 are rejected for being dependent from a rejected base claim.

(p. 3, Office Action 4/27/04)

Applicants respectfully submit that the subject matter of the claimed limitation is fully

described and enable by the specification. Applicants have, however, amended the claims to

more distinctly claim the invention.

Rejections Under 35 U.S.C. § 103(a)

Claims 1-4, 6-12, 14-16 and 24-30 stand rejected under 35 U.S.C. § 103 as being

unpatentable over U.S. Patent No. 6,687,760 of Bracha ("Bracha") in view of U.S. Patent No.

5,793,965 of Vanderbilt, et al. ("Vanderbilt"). The Examiner has stated that

> Claims 1, 8, 9, 16, 24, 26 and 30:
>
> Bracha discloses:
>
> Determining for a query type, that is within the portion of the successive type hierarchy references, if a data object type corresponding to the data object, is the query type [Fig. 3], and if not:
>
> Comparing a depth of the data object type within the plurality of successive type hierarchy references to a depth of the query type within the plurality of successive type hierarchy references [Fig. 5]:
>
> Determining that the data object type is not the query type if the depth of the data object type is not greater than the depth of the query type [Fig. 6A]

Comparing the query type to a corresponding type hierarchy reference and determining
that the data object type is the query type if the query type and the corresponding type
hierarchy are equal [Fig 6A]

Bracha discloses the elements as noted above.

Vanderbilt discloses caching a plurality of successive type hierarchy [paragraph 83]
references corresponding to a data object within the data structure of the data object [Fig.
3, paragraph 80] accessing the cached type hierarchy references at run time to perform
type checking of the data object [abstract]

It would have been obvious to one of ordinary skill in the art at the time the invention
was made to modify Bracha to include caching a plurality of successive type hierarchy
references corresponding to a data object within the data structure of the data object,
accessing the cached type hierarchy references at run time to perform type checking of
the data object as taught by Vanderbilt.

The ordinarily skilled artisan would have been motivated to modify Bracha per the above
for the purpose of storing data in a storage structure that has low access time.

(p. 3-5, Office Action 4/27/04)

Applicant respectfully submits, however, that claim 1, as amended, is not obvious under

35 U.S.C. § 103 in view of Bracha and Vanderbilt. Claim 1 includes the following limitations.

A method comprising:
caching a plurality of successive type hierarchy references corresponding to a data
object within a data structure of the data object; and
accessing the cached type hierarchy references at run time to perform type
checking of the data object by
determining, for a query type, that is within the portion of the plurality of
successive type hierarchy references, if a data object type corresponding to the data
object, is the query type, and if not
comparing a first number corresponding to a number of supertypes of the data
object type within the plurality of successive type hierarchy references to a second
number corresponding to a number of supertypes of the query type within the plurality of
successive type hierarchy references;
determining that the data object type is not the query type if the first number is not
greater than the second number; and
comparing the query type to a corresponding type hierarchy reference and
determining that the data object type is the query type if the query type and the
corresponding type hierarchy are equal.

(Amended claim 1)

In contrast, neither Bracha nor Vanderbilt alone or in combination disclose the limitation of comparing the number of supertypes of a data object with the number of supertypes of the query type.

Moreover, applicant respectfully submits that neither Bracha nor Vanderbilt alone or in combination disclose the limitation of caching a plurality of successive type hierarchy references corresponding to a data object within a data structure of the data object. The Examiner states that Bracha does not disclose such, but that Vanderbilt does at paragraphs 80 and 83 and at Figure 3. A thorough reading of these portions of Vanderbilt will show that there is no mention of successive type hierarchy references being cached in the data structure of the data object. Vanderbilt does not include a thorough description of a data structure for each "object," and makes no suggestion that such contains type hierarchy references. Nor is anything that the Examiner is equating with a "plurality of successive type hierarchy references," be construed to be contained in a data structure of the objects described.

For these reasons applicant respectfully submits that claim 1, as amended is not rendered obvious

Given that claims 2 - 8 depend from claim 1, and further given that claims 9 and 24 contain limitations discussed above, and that claims 10 – 16 and claims 25 – 30 depend from claims 9 and 24, respectively, applicant submits that claims 2 – 8, 9 – 16, and 24 – 30 are, likewise, not obvious under § 103 in view of the references cited by the Examiner.
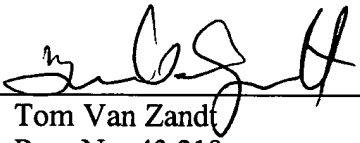
It is also respectfully submitted that Bracha does not teach or suggest a combination with Vanderbilt and that Vanderbilt does not teach or suggest a combination with Bracha. It would be impermissible hindsight based on applicant's own disclosure to combine the dynamic method dispatch process of Bracha with the type-narrowing process for target objects in a distributed object environment computing system of Vanderbilt. Moreover, such a combination would still lack the limitations of the amended claims as discussed above.

Applicant respectfully submits that the further combination of Bruffey with Bracha and Vanderbilt does not remedy the deficiencies of Bracha and Vanderbilt as discussed above.

It is respectfully submitted that in view of the amendments and arguments set forth herein, the applicable rejections and objections have been overcome. If there are any additional charges, please charge Deposit Account No. 02-2666 for any fee deficiency that may be due.

Respectfully submitted,

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